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ENSR

ENSR Consulting
and Engineering

Somerset Executive Square 1
One Executive Drive
Somerset, NJ 08873
(908) 560-7323
(908) 560-1688/FAX

May 6, 1992

Mr. Timothy Method
Indiana Department of Environmental Management
105 South Meridian Street
P.O. Box 6015
Indianapolis, IN 46206-6015

Re: Document Transmittal
Technical Comments Concerning the USS Gary Works PM_{10} Emissions Inventory
ENSR Document Number 6975-048-501

Dear Mr. Method:

Please find enclosed one (1) copy of the above referenced document. The purpose of this document is to formally provide IDEM with USS' responses to technical comments and issues identified by IDEM at our March 27 and April 14, 1992 meetings.

The report focuses on the following issues identified by IDEM:

- technical comments concerning the derivation of PM_{10} emission factors;
- technical comments concerning condensible particulate emissions;
- clarification and corrections to sources included/excluded from the emissions inventory;
- technical comments concerning the validity of particulate emission factors for coke quenching;
- USS proposed limits for the following facilities:
  - opacity limits for Blast Furnace casthouse roof monitors;
  - opacity limit for the #1 BOP Shop roof monitor;
  - opacity limit for the #2 Q-BOP Shop roof monitor;
  - TDS limit for coke quench water makeup.

We appreciate your prompt review of the information contained in this report. ENSR and USS would be please to answer any questions concerning the USS Gary Works emissions inventory.

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Sincerely,

Michael Dennis
Senior Project Manager
ENSR Consulting
and Engineering

Richard Dworek
Director,
Environmental Control
Environmental Affairs
USS

William Kubiak
Manager of
Environmental Compliance
USS Gary Works

ENSR Reference No. 6975-048

Enclosures

cc: S. Harsha, IDEM
D. Kuh, IDEM
L. Tavormina, IDEM
File 6975-040 (B.1.0)

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USS Gary Works

Gary, Indiana

Technical Comments Concerning USS Gary Works PM_{10} Emissions Inventory

ENSR Consulting and Engineering

May 1992

Document Number 6975-048-501

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1.0 SUMMARY

The purpose of this report is to document USS' responses to comments provided by IDEM concerning the USS Gary Works PM_{10} emission inventory and document USS's position concerning certain aspects of the proposed PM_{10} Lake County SIP rule. There are ten (10) attachments to this report (Attachments A through J). The contents of each attachment are as follows:

Attachment A: USS response to comments provided by Shri Harsha dated 3/31/92 and received 4/6/92. These comments concern the Gary Works PM_{10} emissions inventory. Based on these comments, ENSR has revised the PM_{10} emissions inventory to include the following additional sources:

- Pushing emissions at coke batteries #2 and #3 not captured by mobile scrubbing cars;
- Scrap charging emissions at the #1 BOP shop;
- Continuous caster emissions at the #1 BOP Shop.

Attachment B: IDEM comments dated 3/31/92 responded to in Attachment A.

Attachment C: USS response to comments provided by Shri Harsha dated 4/14/92. These comments concern discrepancies between sources included in the draft rule and those in the USS inventory. Based on these comments, ENSR has revised the PM_{10} emissions inventory to include the following additional sources:

- No. 3 Sinter Plant Screening Storage Baghouse;
- No. 3 Sinter Plant Storage Bin Baghouse;
- Coke Plant Boiler #7.

Attachment D: IDEM comments dated 3/31/92 responded to in Attachment C.

Attachment E: USS response to IDEM comments made at the April 14, 1992 meeting concerning the validity of the coke quench tower emissions factors developed by TRC and used by ENSR to estimate coke quench tower particulate emissions.

Attachment F: Revisions to USS Gary Works PM_{10} emission inventory tables contained in Section 2 of ENSR's March 6, 1992 report entitled "PM_{10} NAAQS Attainment demonstration for the USS Gary Works Facility".

Attachment G: Revisions to USS Gary Works PM_{10} emission inventory tables contained in Appendix B of ENSR's March 6, 1992 report entitled "PM_{10} NAAQS Attainment demonstration for the USS Gary Works Facility".

Attachment H: A copy of ENSR's March 18, 1992 submittal to IDEM containing detailed explanations of the BOP and Q-BOP roof monitor PM_{10} emission estimates.

Attachment I: A copy of ENSR's March 19, 1992 submittal to IDEM containing detailed explanations of the coke oven fugitive and coke quench tower PM_{10} emission estimates.

Attachment J: USS proposed coke battery door performance standards, proposed opacity limits for the blast furnace casthouses, #1 BOP shop roof monitor, and #2 Q-BOP shop roof monitor as presented at the April 14, 1992 meeting, and proposed TDS limits for coke quench water makeup.

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ATTACHMENT A

USS RESPONSES TO IDEM COMMENTS PROVIDED BY S. HARSHA DATED 3/31/92

Coke Plant

1: Coke battery production rates as stated in Appendix B of ENSR March 6, 1992 report were used to develop maximum emission rates. The SIP limits should be based on maximum daily production limits of:

Battery #2: 3,365 tons coal per day;
Battery #3: 3,099 tons coal per day;
Battery #5: 1,200 tons coal per day;
Battery #7: 1,251 tons coal per day.

2: At an April 14, 1992 meeting, USS provided IDEM coke battery fugitive emission performance data which supports the control efficiencies estimated by ENSR.

3a: The following are general comments concerning the EPA Condensible Emissions report.

- All test results included in the report predate the adoption of the EPA Test Method 202, so there is an obvious comparability issue;
- Method 202 is recommended to be used with Method 17, unheated probe and filter. Method 5 samples will overestimate the back half catch due to maintaining the probe and filter box at approximately 248°F;
- The EPA Condensibles Report states that the Method 5 results overestimates what is caught in the back half as condensibles;
- A number of tests referenced in the EPA Condensibles Report included impinger solutions other than deionized water that is required in Methods 17 & 5; and
- Method 5 does not include corrections for acid or sulfate formation in the impingers from SO_2/SO_3 in the stack gas. The acids and sulfates which are included in the Method 5 back half catch are defined as PM_{10} precursors not condensible particulates.
- Condensible emissions include semi-volatile organic compounds, such as polycyclic aromatic hydrocarbons, high volatility inorganics, such as mercury, and inorganic salts, such as ammonium sulfate. Any test results used to develop emission factors must account for differences in process raw materials, equipment maintenance, and emission control practices. There is insufficient data available and there are no technical studies to establish specific condensible fractions or emission factors for all sources of particulate associated with integrated iron and steel facilities.

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Two coke battery underfire stack tests with maintenance listed as the control practice are provided in the Condensible Emissions report. The condensible fraction reported for these two tests is 3% and 23%. The former test included a battery with mobile gunning operations. Differences in the condensible fraction can be expected depending on battery maintenance, coking times and temperatures, and coal sources. USS recommends that 3% be used for the condensible fraction for this source. This is consistent with the condensible fraction used by IEPA.

3b: The ENSR modeled emission rate for the #7 coke battery stack is 20.4 lbs/hr. The 19.9 lb/hr value in Table B-1 is an error reflecting prior production data of 50.5 tons per hour.

4: ENSR has reviewed the EPA report "Metallurgical Coke Industry Particulate Emissions: Source Category Report EPA-600/7-86-050". The emission factors used by ENSR for scrubber cars represents captured and controlled emission rates. In our treatment of these sources during dispersion modeling we have assumed that they are fugitive sources. Note that regulatory agencies have not previously required estimates of uncaptured emissions from mobile scrubber cars.

ENSR disagrees with the Department's calculation of the uncaptured PM_{10} emission factor. ENSR's estimate of the uncontrolled emission factor is 0.01 lb PM_{10}/ton based on the following assumptions:

1.15 lb/ton uncontrolled pushing emission factor (AP-42)
98% scrubber car capture efficiency (engineering estimate)
43.3% PM_{10} fraction (AP-42 uncontrolled pushing)

1.15 * (1.0-0.98) * 0.433 = 0.00996 = 0.01 lbs PM_{10}/ton

Note that a 98% capture efficiency corresponds to an approximate scrubber car efficiency of 93.6% [0.072/(1.15-0.01)]. IDEM comments assume a scrubber efficiency of 95%, therefore, this estimate with an inherent control efficiency of 93.6% is conservative.

IDEM has suggested that the pushing emission estimate be increased by 21% to account for the condensible fraction. No justification for this fraction is supplied and the Condensible Emissions report does not address any coke oven source other than battery stacks. USS therefore does not agree with this recommendation.

5a: The modeled PM_{10} emission rate and recommended TSP emission limits for the quench towers are as follows:

Tower No.	PM_{10} Emission Rate (lbs/hr)	TSP Emission Limit (lbs/hr)
2	20.4	63.1
3	18.8	58.1

Tower No.	PM_{10} Emission Rate (lbs/hr)	TSP Emission Limit (lbs/hr)
5	21.2	65.7

The emission rate of 20.9 lb/hr value in USS comments on the draft rule was in error. This value is a PM_{10} value. The correct TSP value is 65.7 lbs/hr as shown in Table B-3 and listed above.

Quench towers # 2, 3, and 5 will be the primary towers used by USS. Towers #1 and 6 will be used on a emergency basis only. Tower #1 in lieu of Tower #2 or 3 and Tower #6 in lieu of Tower #5. (Note Tower #5 serves Battery # 5 and #7).

5b: The quench tower emission rates are based on the TRC stack tests. The original ENSR PM_{10} emission rates utilized AP-42 PM_{10} split (32.3%). The particle sizing data contained in the full TRC Quench Tower emissions report (see attached excerpt) recently provided by USS to ENSR indicates that the PM_{10} split was 10%. In the TRC testing, the back half BSO levels represented approximately 7.5% of the total front half TSP catch. TDS levels in dirty water makeup were greater than 1,500 ppm TDS during the TRC tests. Thus, the ENSR recommended limits are conservative. USS' proposal to limit the TDS in the quench makeup water to a maximum of 1500 ppm will result in emissions reductions as compared to current quench tower emissions.

5c: USS has recently provided IDEM with a description of quench tower limits of 1,500 ppm TDS in makeup water as measured by EPA Method 160.1. A copy of this proposal is included in Attachment J.

5d: The #1 and #6 quench towers will be used on an emergency basis only in lieu of the other towers (#2, 3, and 5). There is no need to include the #1 and #6 quench tower in the compliance demonstration. Towers #2, 3, and 5 were modeled at the maximum throughputs per comment #1 above. The use of Tower #1 or #6 will not increase total allowable emissions.

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Sinter Plant

1: The windbox and cooler emissions data are based on PM_{10} stack tests conducted in December 1987. The 165 lb/hr windbox and 152.8 lb/hr cooler PM_{10} emission rates are based on these tests. No PM_{10}/TSP split assumptions were used to generate these values. The 334.2 lb/hr windbox and 308.6 lb/hr cooler TSP emissions are based on the TSP SIP limits. The PM_{10} splits were arithmetically derived for Table 1 using the PM_{10} lb/hr emission rates based on the stack test results and the TSP lb/hr SIP limit emission rate.

There were a number of entry errors in both Tables 2-2 and B-4 of the ENSR March 6, 1992 report. Both the sinter screening and storage baghouses were not included in ENSR's compliance demonstration. This was consistent with the dispersion modeling runs for Gary Works conducted by IDEM. The two emission values in Table B-4 for screening station and screening station fugitives actually represent the S1/S2 baghouse emissions (See Table 2-2 of same report). Both the S1/S2 baghouse and fugitives were included in the ENSR attainment demonstration dispersion modeling. Corrected Tables 2-2 and B-4 are attached.

The PM_{10}/TSP split was arithmetically derived as discussed above. IDEM recommends a 96% PM_{10} split for the windboxes based on data for venturi scrubber controls for windbox emissions contained in AP-42, Table 7.5-2. Note that the PM_{10}/TSP split is sensitive to the control efficiency of the scrubber. The venturi scrubber TSP emission factor described in AP-42 has a control efficiency of approximately 96%. The permitted overall control efficiency of the air pollution control train (APCT) on the Gary Works sinter plant windbox is 95%. Thus a lower PM_{10} split for the windbox emissions is reasonable. IDEM states that the December 1987 PM_{10} was conducted along with a TSP test and PM_{10} split was 64.5%. This contradicts the recommendation that a 96% PM_{10}/TSP split is appropriate. ENSR was not provided with the TSP test results that coincided with windbox PM_{10} test results. (Note that based on the 64.5% PM_{10} split suggested by IDEM, the corresponding TSP emission rate during the December 1987 test should have been about 256 #/hr which is much less than the current TSP SIP limit.)

ENSR used the Gary Works windbox PM_{10} data rather than AP-42 data because the Gary Works results are reflective of the performance of sinter plant and associated windbox APCT. Since there is considerable uncertainty regarding the relationship between PM_{10} and TSP emissions for the Gary Works sinter plant, USS prefers to use the existing TSP SIP limit as the enforceable limit. ENSR used the 165 lb/hr windbox and 152.8 lb/hr cooler PM_{10} emissions in the Gary Works attainment demonstration.

IDEM recommends a condensible value of 56%. This value is from the EPA Condensibles Report for a facility equipped with an APCT of cyclones, venturi and demister. Other condensible data for sinter emissions in this report include 18% and 27%. A number of comments are in order. First, the data provided do not define which sinter plant sources were tested. Next, condensibles data is not available for a facility with a windbox APCT identical to that present at the Gary Works facility. Finally, the nature of the sinter feed materials has a very large impact on potential condensible emissions. Gary Works has implemented a program to reduce the amount of feed

materials that may affect condensible emission rates for the sinter plant. The data from the tests referenced in EPA Condensibles Report pre-date any air pollution control issues which may have arisen regarding condensibles. Because of these items, ENSR believes that a more reasonable condensible fraction for the sinter windboxes is 10% to 15%.

Q-BOP

IDEM recommends the following uncontrolled TSP emission factors for Q-BOP sources:

Charging - 0.49 lb/t of steel
Tapping - 0.92 lb/t of steel

It is stated that these emission factors were provided to Mike Hanson of USS by Steve Rothblatt of Region V EPA in a 1983 letter. The justification for the charging emission factor is contained in the Alliance Technologies report recently provided by IDEM.

1: Justification and references for ENSR charging and tapping emission factors have been supplied to IDEM (see letter dated March 18, 1992).

2: ENSR disagrees with IDEM's estimate of the controlled charging emission factor. The IDEM emission factor does not incorporate 1) control efficiency due to slow pour practices (25% control), or 2) loss of PM_{10} between source and monitor.

The Alliance Technology report states that slow pour is a viable operational control practice that results in a 25% reduction in uncontrolled emissions. Incorporation of this factor into IDEM's emission estimate reduces the IDEM's emission factor from 0.022 lb/ton to 0.0169 lb/ton steel.

ENSR agrees with IDEM that most of the particles lost within the building are greater than 10 μm in size. However, not all particles greater than 10 μm in size will be lost. In addition, it is unrealistic to assume that no PM_{10} will be lost. ENSR has accounted for the fact that most of the PM lost within the building by (a) doubling the monitor:source BOP charging split in AP-42 from 24% to 48% (see AP-42 Table 7.5-1 page 7.5-9) and (b) increasing the PM_{10} split from 31% to 65%.

Support for the assumption that some PM_{10} is lost within the building can be found in an analysis of AP-42's Hot Metal Transfer (HMT) emission factors. HMT is also "a very hot, buoyant plume". The monitor:source TSP split in AP-42 for HMT is 29.5% (0.056/0.19). IDEM has recommended a PM_{10} split for HMT of 45% (see discussion on BOP emissions below) based on tapping PM_{10} split. The PM_{10} portion of HMT emissions at the source based on this PM_{10} split is therefore 0.0855 lbs/ton as compared to the AP-42 emission factor at the monitor of 0.056 lbs/ton. Obviously some PM_{10} is lost between source and monitor. Assuming all of the particles greater than 10 μm are lost and only PM_{10} is emitted (a conservative assumption), a minimum of 35% of PM_{10} must be lost between the source and monitor.

Based on the above discussion IDEM's charging emission factor should be:

$$0.49 * (1.0-0.25) * (1.0-0.9) * 0.46 * (1.0-0.35) = 0.01099 \text{ lbs/ton steel}$$

where:

0.49 lb/ton	uncontrolled TSP emission factor based on AP-42 emission factor of 0.6 lbs/ton hot metal and hot metal to steel ratio

	of 0.82
(1.0 - 0.25)	25% control efficiency due to slow pour practices
(1.0 - 0.9)	90% control efficiency of charging hood
0.46	PM_{10} split at source (AP-42)
(1.0 - 0.35)	PM_{10} lost between source and monitor.

A final comment concerning the charging PM_{10} split is warranted. The rating of this emission factor is "E" (i.e., Poor). The EPA document "Iron and Steel Industry Particulate Emissions: Source Category Report, EPA-600/7-86-036" states that particle size data from the Republic Steel Cleveland, OH test is of low reliability. This is the test used for the AP-42 PM_{10} split. The PM_{10} split documented in the Westbrook report (March 1981) is 31%. ENSR would like to note that if the PM_{10} split (31%) provided in the Westbrook articles in conjunction with the 25% control efficiency due to slow pour practices was used by IDEM, the final IDEM PM_{10} emission factor would be 0.0114 lb/ton steel.

In summary, ENSR's PM_{10} emission factor for Q-BOP charging is comprehensive, conservative and is consistent with existing emissions data for this source operation. IDEM uses a partial treatment of the source emissions and questionable data for the PM_{10} split.

3: For comments on tapping emission factor, see the ENSR submittal to IDEM dated March 18, 1992.

4: For HMT Mixer emission estimates, see ENSR submittal to IDEM dated March 18, 1992. Differences between ENSR and IDEM estimate are (1) ENSR used a PM_{10} split of 50% vs. IDEM 46%, and (2) ENSR did not take into account hot metal/steel ratio. ENSR's estimate is therefore conservative. Note that neither ENSR nor IDEM included particulate loss between source and monitor.

5: For HMT Ladle emission estimates, see the ENSR submittal to IDEM dated March 18, 1992. Difference between ENSR and IDEM estimate are (1) ENSR used a PM_{10} split of 50% vs. IDEM 46%, (2) ENSR did not take into account hot metal/steel ratio, and (3) IDEM did not take into account significant particulate loss between source and monitor. HMT ladle emissions take place within the melt shop, therefore, there will be particle loss between source and monitor. For a discussion of this see charging discussion above.

6: Teeming will no longer take place.

7: Primary fugitives - difference is attributable to IDEM rounding initial TSP emission factor from 0.0866 (correct value) to 0.087. Emission factor should be 0.00474 lb/ton steel.

8: Hot metal desulfurization - IDEM and USS agree 0.0034 lb/ton steel.

9: IDEM recommends addition of 44% to Q-BOP stack emissions to account for condensibles. This value is for BOP scrubbers and is from the EPA Condensibles Report, where additional values of 40% and 19% are present. No justification is provided for selection of 44%. These values are unlikely to be similar to condensible fractions at the Gary Works QBOP shop since the major source of condensibles is from scrap charging,

which are not captured for control by the scrubber system. Also, the overall performance of the venturi scrubbers should have a significant impact on the extent of the condensible fraction emitted from QBOP furnaces. Since EPA Method 5 overestimates the condensible fraction USS disagrees with this recommendation and recommends that at most 19% be used to represent condensibles.

Additional Questions Regarding Q-BOP Emissions

1: Question regarding 107 lb/hr (total shop emissions) on page 2-8, correct value is 97.4. This is a summary number not used in modeling or source inventory. The controlled hourly emission rate for the Q-BOP roof monitor is 22.6 lbs/hr.

2: Daily production limits are as stated. USS will record daily production and maintain records of daily production for inspection by IDEM personnel. Records will be maintained for a period of two years.

3: Emission factors and assumptions are discussed above and in ENSR's March 18, 1992 letter which is included as an attachment to this document.

4: Information concerning conceptual design was provided by Eichleay Engineers during a March 26, 1992 meeting.

5: IDEM recommends that USS address scrap charging, vessel rocking, kish removal and slag tapping in the inventory. Scrap charging is addressed in the ENSR inventory. ENSR's March 18, 1992 submittal to IDEM details the logic behind using all lb/ton hot metal emission factors as lb/ton steel without any conversion. Briefly, ENSR used lb/ton hot metal emission factors without conversion to lb/ton steel for both charging and hot metal transfer. This approach more than accounts for uninventoried sources.

6: USS, at an April 14, 1992 meeting, provided additional information of roof monitor opacity limits. At present, USS is not proposing a specific opacity limit for the No. 2 Q-BOP Shop roof monitor. USS has proposed to install an enclosed hood evacuation system at the No. 2 Q-BOP shop to capture and control charging, tapping and primary fugitive emissions. Details of this system were provided to IDEM on March 27, 1992. USS proposes that design specifications and operating and maintenance practices be developed for this proposed control system for inclusion in the rule. However, until the system is installed and operational, USS is not proposing a specific opacity limit for this source.

BOP Roof Monitor

(i): ENSR has revised the BOP charging emission factor to comprehend scrap charging as follows:

Data/Assumptions	**Source**
0.142 lb TSP/ton hot metal at monitor	AP-42, Supp A, Table 7.5-1
Approximate % of scrap charged at BOP 20%	USS Plant Data
Scrap charging is one-third (33%) as emissive as hot metal charging	USS Engineering Estimate
PM_{10} split - 46%	Table 7.5-2 AP-42, Supp A

Emission Estimate

To develop this emission estimate it was necessary to use the uncontrolled TSP emission rate (at the monitor), a conservative PM_{10} split and the uncontrolled release from the Gaw Damper, or:

I: Uncontrolled TSP Emission Factor = 0.142 lb/t TSP, at monitor;
II: Scrap charging represents 20% of the metal charged;
III: Scrap charging is one-third (33%) as emissive as hot metal charging;
IV: PM_{10} split = 46%, or 0.46; and

Scrap Charging Emission Estimate

(0.142 lb/t TSP) * (0.2, metal split) * (0.33, relative emission rate) * (0.46, PM_{10} split) =

0.0043 lb PM_{10}/t steel or by rounding, 0.004 lb PM_{10}/t steel

(ii) ENSR hot metal charging emission factor is documented in March 18, 1992 submittal to IDEM. Note that ENSR emission factor is based on AP-42 lb/ton hot metal emission factor at the monitor and does not take into account hot metal to steel ratio. It is therefore conservative.

iii) IDEM steel tapping emission factor is 0.0945 lb/ton and does not take into account fume suppression control efficiency which is 80%. Taking this into account, IDEM emission factor is 0.0189 lb/ton. ENSR emission factor is 0.044 lb/ton (see March 18, 1992 submittal). This emission factor is based on AP-42 emission factor at the monitor. ENSR's emission factor for tapping extremely conservative since metallurgy no long takes place in the ladle and is sufficient to cover emissions from steel and slag tapping (see following discussion) and other unquantifiable emissions such as kish removal, vessel rocking and turndown, flux addition, and ladle repair.

iv) IDEM recommends identical emission factors for steel and slag tapping. There is no

technical basis for a slag tapping emission factor. ENSR used the AP-42 emission factor for tapping, which will significantly overstate emission from this operation since metallurgy no long takes place in the ladle (see above discussion).

v) ENSR hot metal transfer emission factor (0.011 lb/ton) is based on AP-42 emission factor of 0.056 lb/ton hot metal at the monitor and fume suppression control efficiency of 80%. Hot metal to steel ratio was not included in this emission factor, therefore, it is conservative and will account for emissions from unquantifiable sources such as kish removal, vessel rocking and turndown, flux addition, and ladle repair.

vi) HMD takes place outside the BOP shop. The source name is the Iron Desulfurization baghouse (modeling inventory source #94041). Since the source is near the blast furnaces it has previously been included in the blast furnace inventory.

vii) Continuous caster - emissions from continuous caster added to BOP roof monitor emission estimate. Q-BOP continuous caster emission factor used.

viii - xi) Unquantifiable sources are accounted for in ENSR's charging, tapping, and hot metal transfer emission factors (see discussions above).

xii) Primary fugitives - ENSR and IDEM are in agreement.

2: USS has provided a discussion to IDEM regarding the Gaw Damper controls. Alliance Technology used an 80% control efficiency prior to the recent improvements in operating practices. ENSR's use of an 80% Gaw Damper efficiency is therefore conservative.

3: USS has provided IDEM with control efficiency estimates for fume suppression controls for tapping. We emphasize again that ENSR used the AP-42 emission factor for tapping, which will significantly overstate emission from this operation since metallurgy no long takes place in the ladle.

4: Please see the ENSR comments regarding the PM_{10} HMT emission factor above.

IDEM included an arbitrary 15 lb/hr PM_{10} emission rate for uninventoried sources. ENSR's emission factors for both charging and HMT embrace additional uninventoried sources, and our estimate of tapping emissions also is conservative, i.e. it overestimates emissions, to cover uninventoried sources.

5: The proposed No. 1 BOP shop roof monitor opacity limit, as discussed at out April 14, 1992 meeting is:

The opacity of visible emissions, other than water mist or vapor, from the No. 1 BOP Shop roof monitor shall not exceed twenty (20) percent per hour as determined on a six (6) minute rolling average. When determining the six (6) minute rolling average basis, a maximum of ten (10) minutes per hour (forty 15 second observations) shall be excluded from the rolling average calculation. EPA test Method 9 shall be utilized to determine compliance with this limit.

6: IDEM recommends addition of 44% to BOP stack emissions to account for condensibles. This value is for BOP scrubbers and is from the EPA Condensibles Report, where additional values of 40% and 19% are present. No justification is provided for selection of 44%. These values are unlikely to be similar to condensible fractions at the Gary Works QBOP shop since the major source of condensibles is from scrap charging, which are not captured for control by the scrubber system. Also, the overall performance of the venturi scrubbers should have a significant impact on the extent of the condensible fraction emitted from QBOP furnaces. Since EPA Method 5 overestimates the condensible fraction USS disagrees with this recommendation and recommends that at most 19% be used to represent condensibles.

Blast Furnaces

The maximum daily blast furnace production level is 22,000 tons per day. This production level will be met by BF #4, #6, #8, and #13. BF #7 will be used as a swing furnace and will only be operated in lieu of one of the others. Each of the operational BF's are capable of operating at maximum load with maximum production levels as follows:

BF #4 - 5,300 tons per day
BF #6 - 5,300 tons per day
BF #8 - 4,320 tons per day
BF #13 - 10,500 tons per day.

The short term modeling was performed at these production capacities. Note that there have been corrections to the maximum hourly capacities of the BF stoves. See corrections to Table B-5 which is included as an attachment to this document.

The maximum annual blast furnace production capacity will be limited to 6,643,000 tons per year. USS is willing to commit to this annual production level and will perform record keeping to verify compliance with this limit. Records will be kept for inspection for a minimum period of two years. This corresponds to an average daily production level of 18,200 tons per day. Long term modeling utilized emission rates proportional to this value. It is USS's intention to utilize BF #4, #6, and #13 first to meet these production needs. Therefore, for the annual modeling analysis BF #4, BF #6, and BF #13 were modeled at the following daily production levels to meet the annual production capacity.

BF #6 - 4,800 tons per day
BF #8 - 4,400 tons per day
BF #13 - 9,000 tons per day

The #13 sinter screening baghouse emission rate contained in ENSR's original inventory document was in error. The correct value is 2.5 lbs/hour based on maximum allowable grain loading and throughput volume. The corrected value was incorporated in ENSR's March 1992 modeling analysis.

The proposed blast furnace casthouse roof monitor opacity limit as discussed at the April 14, 1992 meeting is as follows:

> The opacity of visible emissions, other than water mist or vapor, from blast furnace casthouse roof monitors shall not exceed twenty (20) percent per cast as determined on a six (6) minute rolling average. When determining the six (6) minute rolling average basis, a maximum of ten (10) minutes per cast (forty 15 second observations) shall be excluded from the rolling average calculation. EPA test Method 9 shall be utilized to determine compliance with this limit.

IDEM COMMENTS CONCERNING USS GARY WORKS PM_{10} EMISSIONS INVENTORY

DATED MARCH 31, 1992

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Recvd 4/6/92

USX

SHRI HARSHA 3/31/92
317-232-8228

Coke Plant

1. Following production rates for coke batteries will be enforced. Emissions were estimated at these rates.

#2	Battery	140.2 tons/hour	coal charged
#3	"	129.1 tons/hour	"
#5	"	50 tons/hour	"
#7	"	52.1 "	"

2. Provide details of "battery leak detection program" for which 98.6% control for door leak emissions and 90% control for lids and off takes emissions assumed.

3. Underfire stacks:
Emissions are based on stack test. Did stack test measured "back half" catch of the sampling train. In other words do the emission estimates include "back half" catch of Method 5 sampling train. If the above is not the case it is suggested that 23% of the total particulate emissions be added to the emissions in Table B-1 of ENSR March 1992 report. Emissions for #7 UF stacks are 19.3 lbs/hr in Table B-1, 20.4 lbs/hr in Table 2-1 and 20.4 lbs/hr in Table 1 of USS Comments dated 2/13/1992.

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4. Pushing emissions:
Emissions rates for mobile Car scrubber stacks need to be estimated and model

If AP-42 EF of 0.072 lb/ton represents pushing fugitive ~~emissions~~:

~~Captured~~ emissions = 1.15 − 0.072 = 1.078 lb/ton

Assuming η of Scrubber 95%,

TSP emissions = 0.054 lb/ton TSP

= ~~0.017~~ 0.017 lb/ton PM10

(32% PM10 AP-42)

~~USS may chose to have TSP or PM10 emission limit for Scrubber stacks, however that limit should be modeled and will be expressed as emission limit.~~

~~To~~

If USS has stack test on mobile Car Scrubber ~~Cars~~ stacks, that emissions can be used for modeling. ~~However~~ Since the AP-42 emission factor or the USS stack test ~~may~~ has not / may not have taken into account back half ~~catch~~, those emissions should be ~~used~~ added to and modeled. However the emission limit ~~will be expressed~~ will not include back half catch. Additional 21% is suggested.

~~39~~

Alternatively, 326 IAC 6-1-10.2 (3), (C) will prescribe 0.017 lb/ton PM10 for all Scrubber stacks instead of 0.023 lb/ton PM10 in the draft rule.

00002

5. Quench emissions:

(A) Please compare the emission rates in Table B-3, March 1992 report and Table 1, USS Comments, ~~Feb 21~~ February 14, 1992.

	~~Table B-3~~ (TSP)	Table 1 TSP
Quench #2	63.1 lbs/hr	68.2
Quench #3	58.1 lbs/hr	68-2
Quench #5	65.66 lbs/hr	20.9.

March 1992 report Do the mass emission rates in Table B-3 and for that reason ^ replace those in Table 1 of 2/14/92 comments.

Table B-3 lists Towers # 2, 3, 5, 8, 9, while Table 1 lists 2, 3, 5 & 6 and 7 Quench ~~crate~~ towers. Please clarify. Table B-3 indicates that towers # 8 and 9 are not used continuously Do they share ~~them~~ emissions with # 2, 3 5. If so, should not they be modeled too.

(B) Table B-3, quench tower emissions are based on stack test but ~~they~~ use PM10 fraction of AP-42. What ~~was~~ the PM10 fraction/ fine particulate fraction observed in that test? was back half ^ catch included in the emissions in Table B-3? If not, 21% ~~be~~ of the TSP be added to the PM10 emissions for modeling

(C) what limits for quench tower USS proposes: TSP, PM10, opacity, TDS? If TDS is the proposed enforceable criteria, how USS proposed to comply with this limit at all times. Proposed

monitoring (once per week) for TDS will not ensure continuous compliance with the proposed limit. USS needs to provide the information on the sources of makeup water and volumes. In view of the 30% to 40% higher Benzene soluble organic emissions and 27% higher Benzo-a-prine emissions, and 25% 50% higher fine particulate fractions with dirty water use, IDEM suggests that USS use quench water as applied not to exceed 700 mg/l TDS concentration. (The above results were reported in the same test from which USS took TSP emission factors). Those emissions reduced substantially with clean water quench.

D. USS has not addressed No.1 quench tower in the march 1992. report. C addressed in 2/13/1992 comments). Based on past usage data, emissions should be assigned to this and other quench towers and (not continuously used) and the same be modeled.

E. 326 IAC 6-1-10.2, does not specify mass and opacity limits for underfire stacks and pre carbonization, but refers them to other rules. To make 326IAC 6-1-10.2, a complete Coke battery rule, these sources are listed, in

000022

Sinter Plant

A. ~~Table B-4~~ Please clarify the following differences between Table B-4 March 1992 and Table 1 2/14/92 comments

	Table B-4	Table 1
Windbox	165 lbs/hr (PM10 = 100% TSP)	334.2 lbs/hr TSP ≈ 165 lbs/hour PM10 with 49.3%
Sinter Plant Coolers	152.8 lbs/hr (PM10 = 100% TSP)	308.6 lbs/hr TSP ≈ 152.8 lbs/hr PM10 with 49.5%
Screening Station Baghouse	0.8 lbs/hour (PM10 = 100% TSP)	1.3 lbs/hour

- Sinter Plant storage ~~Bin~~ Baghouse shown in Table 1 but not in Table B-4.
- Check tables 2-2 and B-4 for consistency in source description. S_1/S_2 Baghouse shown in Table 2-2 but not in Table B-4. S_1/S_2 Baghouse fugitives does not appear in Table 1.

000023

B. ~~USS~~ Windbox stacks

USS seems to request 334.2 lbs/hr TSP limit and 165 lbs/hour PM10 for model after application of 49.5% PM10 fraction. ~~PM10~~ Proposed PM10 fraction is not explained. AP-42 Table 7.5-2 provides 59% with wet ESP and

96% with Venturi scrubber. ~~[illegible]~~ with the present control configuratin 96% is more appropriate. In 1987, USS was able to measure both TSP and PM10 emissions from this source. The average of the three runs was 64.5%. There is no justificatin for using 49.5%. Further IDEM recommends ~~that~~ ~~USS~~ PM10 emissions as emission limits and modeling emissions. Also, if back half catch was not included in the tested emissions it should be added for modeling. 56% is a suggested number.

General Comments:

USS was able to measure PM10 emissions at windbox and cooler stacks. These numbers or numbers very close to these should be used for modeling and for TSP limits.

[redacted]

000024

@ BOP:

1. As indicated in Table C-2, March 92, report cannot find emission factors for charging and tapping in AP-42, October 1986 supplement.

2. Recommend that the following TSP EFs and PM10, be used:

*	1.	charging	0.49 lb/ton steel
*	2	tapping	0.92 lb/ton steel
	3.	Hot metal transfer	

* Recommendations by USEPA to USS on 3/4/83.
(Steve Rothblatt to Mike Hanson)

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II

Q BOP

1. ~~Cannot~~ find charging and tapping emission factors in AP-42 October 1986 Supplement. (Table C-2)

2. Charging:

Please support the assumption ~~is~~ 48% of emissions reach roof monitor and 65% of the emissions at roof monitor are PM10.

Charging hood η

USS $0.37 \frac{lb}{ton} \times 0.48 \times 0.65 \times 0.1 = 0.0115 \frac{lb}{ton}$

IDEM $0.49 \frac{lb}{ton} \times 0.1 \times 0.46 = 0.022 \frac{lb}{ton}$

↓ charging hood η

→ Table 7.5.2 AP-42 BOF charging at source

~~we do not have data of particle size distribution at roof monitor, however it is a high temperature buoyant plume with high first cut possibility of particle fallout is very little if at all some particles fall out.~~

- 0.37 lb/ton TSP Emission factor (EF) is very small to start with. The emission factor should be at least 0.6 lb/ton same as for BOF charging at source (AP-42, October 1986) if not more for QBOP charging.
- charging plume is a very hot and buoyant plume, therefore chances of particle fallout under gravity or by interception by building obstructions are very less. Even if that is the case, particle fallout is taken care by assuming that 46% of the total particulates at source were less than or equal to PM10 in size, 56% of the particles fall out and all that reaches roof monitor is PM10. 56% takes care of the building effect in capturing

000027

tides 10 μm or larger in size. Therefore
fraction at the roof monitor should be a
100%.

3. Tapping

Please explain the TSP EF for tapping (0.0035 lb/ton) Table C-2. USS mentioned in the meeting that teeming EF of 0.07 lb/ton was the starting point because alloys are not added any more during tapping. BOF tapping EF for tapping is 0.92 lb/ton (AP-42). Do the alloy additions account for 92% control?

IDEM 0.92 lb/ton × 0.51 (tap hood η) × 0.45 (PM10% for BOF (AP-42) ↓ same logic as for charging.) = 0.21 lb/ton steel

4. HMT mixer

IDEM 0.19 lb/ton Hot metal (AP-42 EF) × 0.82 (hot metal to steel ratio) × 0.02 (98% hood capture η) × 0.46 (PM10% same as BOF charging) = 0.0014 lb/ton steel

000028

5. HMT Ladle: USS explained in the meeting that fume suppression system will be taken off

98% hood capture eff

↑

[redacted] 0.19 lb/ton hot metal × 0.82 (hot metal to steel ratio) × 0.02 × 0.46 (PM10%)

= 0.0014 lb/ton steel.

6 Teeming: IDEM will indicate in the rule that teeming will be discontinued at this facility.

7. Primary Fugitive.

PM10 emission rates ~~bottom~~ = 16 lbs/hr (one stack)

32 lbs/hr (both stacks)

$\frac{625}{466.2} \times 20.2 =$ 27.08 lbs/hr TSP × 0.67 (PM10) (one stack)

= 18.14 lbs/hr PM10

= 36.28 lbs/hr PM10 (both stacks)

$= 36.28 \frac{\text{lbs}}{\text{hr}} \times \frac{552.1}{625}$

= 32 lbs/hr PM10 (both stacks)

TSP with reduced prod. rate 552.1 tons/hr

= 23.92 TSP (one stack)

= 47.84 TSP (both stacks)

[redacted] TSP EF = ~~0.086~~ 0.087 lb/ton TSP.

TSP EF before control = 0.087/0.05 = 1.733 lb/ton ✓

Hood Capture eff = 98% (assume) ✓

Total TSP emissions = $\frac{1.733}{0.98}$ = 1.768 lbs/ton

TSP Emissions ~~not~~ escaping to roof monitor = 1.768 × 0.02 = 0.035 lb/ton

= 0.035 × 0.67 (PM10

= 0.024 lb/ton (PM10)

80% capture assume ~~of~~ for hood to capture primary fug = 0.0049 lb/ton (PM10)

8. Hot metal Desulfurization.

Please provide the reference for TSP EF of 0.034 lb/ton. USS mentioned that the casting point used a stack test with TSP EF of 0.46 lb/ton using specific type of reagents. USS should agree to using those reagents only.

IDEM estimate.

1.09 lb/ton hot metal × 0.82 (hot metal to steel ratio) × 0.02 (hood capture η) × 0.19 (PM10 %)

Table 7.5-2 AP-42 (hot metal desulf uncont)

= 0.0034 lb/ton (PM10)

same as USS

Total PM10 emission factor =

0.022	lb/ton	charging
0.210	"	tapping
0.0014	"	HMT mixer
0.0014	"	HMT ladle
0.0049	"	Primary flg
0.0034	"	HMD
0.243	lb/ton steel	

PM10 emissions = 0.243 × 552.1 tons/hr

= 134.2 lbs/hr

as compared to USS emission rate of 21.03 lbs/hr

= 552.1 tons/hr × 0.0381 lb/ton

= 21.03 lbs/hr

000030

Q BOP Scrubber stacks:

(i) Short term emission rates are based on stack test 6/6-7/91, Table B-7. March 1992. Do these emissions include "back half catch" of the sampling train? If not an adjustment of "44% of the total particulate emissions" should be made.

(ii) How the scrubber efficiency of 95% derived?

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Questions and Comments regarding QBOP

1. What ~~short term~~ PM10 emission rates for QBOP. Table 2-4 indicates 22.6 lbs/hr. Section 2.6 Page 2-8 indicates 107 lbs/hr. ~~Table~~ Calculated from Table C-2 is

   0.0381 lb/ton × 552.1 tons/hr = 21.03 lbs/hr.

   IDEM estimate is ~~21.03~~ 134.2 lbs/hour

2. As USS mentioned in the meeting, QBOP at maximum production of 13250 tons/day and BOF at maximum production of 10750 tons/day yields Worst Case. Therefore the following daily production limits for QBOP and BOP shops will be enforced:

   1. QBOP = 13250 tpd BOP = 10750 tpd
   2. QBOP = 11,040 tpd BOP = 12960 tpd

   A mechanism to monitor these production rates will have to be developed.

3. Please provide support for emission factors and other assumptions as requested in the IDEM's Calculator Calculations.

4. Please provide a conceptual design of the proposed Controls at QBOP shop. Also show the existing Controls For the proposed secondary system show:

   (i) location of proposed hoods w.r.t the vessels and charging and tapping stations. How the hoods will be connected to the control system.

   (ii) if the system will control emissions from scrap charge, vessel rocking and turndown.

000035

5. Please provide uncontrolled or controlled PM_{10} emissions rates (depending on the proposed controls will / will not control) for the following processes:-

(i) Scrap charge
(ii) Vessel rocking and turndown
(iii) Kish removal.
(iv) Slag tapping.

IDEM recommends that 10% of the uncontrolled emissions be added to the controlled emissions for modeling..

6. Please provide support for the requested 30%, ~~6 hour~~ opacity limit for the BOP roof monitor. The existing limit for this source is [redacted] 30% opacity. With the proposed controls on hot metal transfer and secondary controls on charging, tapping, and primary fugitive emissions [redacted] extensive improvements in the visible emissions should be expected. Still maintaining 30% opacity limit will imply no ~~expected~~ improvements. Therefore, ~~proposed~~ limit of 15% 3 minute average should continue to be observed.

000034

BOP [redacted] monitor

1. It is [redacted] that USS account for the following processes/operations in the BOP shop.

		TSP EF	PM10 %
(i)	Scrap charge	0.15 lb/ton	46%
(ii)	Hot metal charge	0.15	46%
(iii)	Steel tapping	0.21	45%
(iv)	Slag tapping	0.21	45%
(v)	Hot metal transfer	0.16	46%
(vi)	Hot metal desulfurization (takes place outside BOF shop?) and included in the inventory	0.89	19%
(vii)	Teeming ? Does not take place (Continuous caster?)	0.07	[redacted]
(viii)	Kish removal		
(ix)	Vessel rocking and turn down		
(x)	Flux addition (included somewhere else in the inventory?)		
(xi)	Ladle repair and dumping.		
(xii)	Primary fugitives	As determined by USS.	67%

000035

[redacted] to EPA Region V, Alliance indicates that [redacted] applicability of TSP emission factors to BOF is questionable. For other processes for which emission factors are not available, 10% of the uncontrolled emissions be added to the controlled emission rates.

2. Please indicate how the Gas damper η of 80% was derived? Is the Gas damper operative during Scrap charge? What fraction of the hot metal charge cycle the Gas damper is ~~of~~ effective. our

Visual estimate is that Gas damper controls only 50% of the hot metal charge emissions and therefore, that η is recommended.

3. Tapping :-

what is the support for 80% fume suppression η? Is it based on estimate of rate of iron oxide formation and removal of the same by natural gas burn or other mechanism? Is fume suppression effective during slag tapping also? why the fume suppression η for BOF and QBOP shops are different. (80% Vs 70%).

4. Hot metal transfer

IDEM estimate = 0.19 lb/ton hot metal × 0.82 (hot metal to steel ratio) × 0.2 ↓ 80% η for fume suppression × 0.46 ↓ PM10 = 46%

= 0.014 lb/ton steel

Please provide support for fume suppression. our estimate is that it is less than 80% and the control itself is unsteady.

Our estimate of the BOF emissions are 0.123 lb/ton PM10 emission factor and 0.123 lb/ton × 416 tons/hr + 15 lbs/hr (other processes) = 66.168 lbs/hr with the present control configuration as compared to USS's estimate 0.1 lb/ton × 447.9 tons/hr = 44.79 lbs/hr

IDEM's revised estimate will be

~~0.123 lb~~ 0.123 lb/ton × 447.9 tons/hr

= 55.09 lbs/hr + 15 = 70 lbs/hr

000036

At 66.168 lbs/hour, BOP required following controls to demonstrate attainment

(i) Secondary Control system

(ii) Hood and venting to Baghouse, hot metal transfer

(iii) Hood and baghouse control at for Rish removal

5. USS is requested to provide support for the requested opacity limit of 30% for BOF roof monitor.

USS's TSP EF = 0.142 x 0.2 + 0.29 x 0.2 + 0.056 x 0.2 + 0.01 = 0.137 lb/ton

Existing limit = 0.24 lb/ton TSP, 3% average opacity.

BOF Scrubber Stack

BOF Scrubber stack emissions are based on stack test. If back half catch was not included the emissions should be adjusted by 44% of the total particulate emission to account for the same.

USX. Comments 3/18/92

So [redacted] Coke Plant. Sinter Plant. Windbox stacks QBOP. BOF.

Blast Furnaces: Casthouses

#4 Max. 5300 tons/day. Ave. 4800 tons/day

#6 5300 " 4400 "

#7 max/Ave zero. Swing furnace

#8 Max. 4320 tons/day. Ave. Zero. Swing Furnace

#13 Max. 10,500 tons/day. Ave. 9000 tons per day.

(1) Info from

- Table 4-6, shows #4, 6, 8, = 13 blast furnace casthouse fugitives included. Not sure if ~~#13 BF c~~ ~~#7~~ ~~included in the model~~ in front of #7 blast furnace casthouse included in the model. (not included).

(2)

- #4, 6, 13 normal operation.
- #7 ~~and 8~~ will not operate in conjunction with #13.
- 7 and 8 will operate when others are down.

(3) [redacted] Comparison of USS and IDEM model results.

#	IDEM Prod rate	IDEM Emissions	USS Production rate	USS Emissions
4		6.75	220.8 tons/hour	6.8
6		5.79	220.8 tons/hour	6.8
7		5.81	0	0
8		5.52	180.8 tons/hour	5.5
13		31.28 ✓	437.5 tons/hr	31.2 ✓

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11

3/18/92.

BF stove	mmBtu/hr	ENSR lbs/hr	IDEM	Cap. IDEM (USX addendum)
#4	~~200~~	~~212~~	11.6 ✓	11.6 ✓	400
#6	470	~~116~~	13.6 ✓	11.5 ✓	397
#7/8	400 (#7)	~~136~~	2.4 ✓	23.2 (#7 and 8)	400 ✓
#13	1411	~~###~~	21.2 ✓	21.2	1411 ✓

#8 → 83 mmBtu/hr

Emission limit for 7/8 is 23.2 lbs/hr in Table 1 of comments (400) instead of 2.4 lbs/hr modeled

Iron Dessel Baghouse	ENSR	IDEM
	9.4	4.05 ?

Basis for 9.4 lbs/hr we ~~kept~~ should use 4.05 lbs/hr

#13 Blast Furnace Sinter Screening Baghouse

ENSR	IDEM
2.5 lbs/hr ↓ Row ?	0.02 from ENSR 1991 addendum based on 0.01 gr/dscf

Proposed

- IDEM used ENSR's emissions in 1991. ENSR changed these in March 92 Submission without any explanation
- Emission limits requested by USX in their comments of 2/14/92 differ from the emissions modeled in March 1992 for the same sources

000039

ATTACHMENT C

USS RESPONSES TO IDEM COMMENTS PROVIDED BY S. HARSHA DATED 4/14/92

1: Sources in draft rule but not in USS inventory.

- **No. 3 Sinter Plant Discharge Area Baghouse**
  This source was included in the ISCST input file supplied to ENSR by IDEM in August 1991. It was included in all subsequent modeling but was inadvertently excluded from the revised inventory.

- **No. 3 Sinter Plant Screening Station Baghouse**
  No. 3 Sinter Plant Storage Bin Baghouse
  These sources (Nos. 94009 and 94010) were not included in the ISCST input file supplied to ENSR by IDEM in August 1991 since their emission rates were less than one pound per hour. As such, these sources were not included in ENSR's modeling. The emission rates for these sources have been revised and will be included in future modeling and inventories.

- **Slab Grinder Baghouse**
  This source (No. 94044) no longer operates and was not included in the revised inventory or the most recent modeling.

- **No. 3 Precarbon Preheater Baghouse**
  This source (No. 94006) was not included in the ISCST input file supplied to ENSR by IDEM in August 1991 since its emission rate was less than one pound per hour and as such, was not included in ENSR's modeling.

- **No. 2 Q-BOP Ladle Metallurgy Baghouse No. 1**
  No. 2 Q-BOP Ladle Metallurgy Baghouse No. 2
  Emissions from these sources are included in those for the proposed Ladle Metallurgy Facility Baghouse (Source No. 94054) in the modeling and inventory.

- **Electrogalvanizing Boiler**
  Tin Mill Boilers #1 - 5
  160"/210" Plate Mill Batch Reheat Furnaces #1 - 4
  These sources were not included in the ISCST input file supplied to ENSR by IDEM in August 1991. Per USS personnel, these sources operate on natural gas only, and thus were not included in the inventory or associated modeling.

- **#2 Coke Plant Boilers # 1,2,3, and 7**
  The revised SO_2 SIP contain a number of restrictions on the #2 coke plant boilers. The #2 Coke Plant Boilers #1 and #2 operate only on natural gas, #3 through #6 operate only on coal, and #7 and #8 may operate on either natural or coke oven gas. In addition, there is an operating restriction that no more than four units may operate at any one time on coal and coke oven gas. ENSR's

inventory and modeling approach will be revised to reflect this worst-case configuration. Please refer to revised emission inventory tables contained in Attachment F and G.

- **160"/210" Plate Mill Car Bottom Heat Treating Furnace**
  160"/210" Plate Mill Car Bottom Norm Furnace
  160"/210" Plate Mill Hot Pits
  These sources were not included in the ISCST input file supplied to ENSR by IDEM in August 1991. Per USS personnel, these sources operate on natural gas only, and as such were not included in modeling performed by ENSR.

2: Sources in USS inventory but not in draft rule

- **S1/S2 Baghouse**
  This source was mislabeled as the "Screening Station" (Source No. 94053) in the revised inventory. The baghouse is rated at 0.005 gr/dscf.

- **S1/S2 Baghouse Fugitives**
  This source was mislabeled as "Screening Station Fugitives" (Source No. 94130) in the revised inventory. It was modeled as a volume source to represent the emissions which are not collected by the baghouse system which escape from the sinter plant building. The emission rate for the S1/S2 Baghouse assumes 99% control efficiency and 95% capture efficiency.

- **160"/210" Plate Mill Torch Cutoff Machine**
  The emission rate for this source (No. 94131) represents 0.01 lb/hr from the natural gas fired unit, rated at 1.93 MMBtu/hr, and 1.72 lb/hr in process emissions. Capacity was given as 200 tons of steel plates per hour by USS personnel. There is no stack or roof monitor; all emissions vent inside the structure.

- **160"/210" Plate Mill Slow Cool Furnace**
  The emission rate for this source (No. 94133) represents two 32 MMBtu/hr furnaces which use natural gas only. There is no stack or roof monitor; all emissions vent inside the structure.

- **160"/210" Plate Mill Keep Hot Furnace**
  The emission rate for this source (No. 94132) represents three 16 MMBtu/hr furnaces which use natural gas only. There is no stack or roof monitor; all emissions vent inside the structure.

000041

IDEM COMMENTS CONCERNING USS GARY WORKS PM_{10} EMISSIONS INVENTORY

DATED APRIL 14, 1992

Comparison of USX printout with draft-Proximate. 4/14/92

1. Sources in the rule but not in the USS inventory

- No 3 Sinter Plt Disch Area BH.
- No 3. Sinter Plt Screening Stn BH
- No3. Sinter Plt Storage Bins Bldg B.H.
- Slab grinder Baghouse
- No 2. Pre carbon. Preheaters Building BH
- No 2. Q BOP Ladle Met. BH No 1.
- No. 2. Q BOP Ladle Met BH No. 2
- Electrogalvanizing boiler
- #2 Coke Plt Boiler Hse Boilers # 1, 2, 3, 7
- Tin mill Boilers # 1, 2, 5, 3, 4
- 160/210 inch plate mill, Batch Reheat Furnaces # 1-4

- 160/210" Plate Mill Car Bottom, Heat Treating furnace
- 160/210" Plate Mill, Car Bottom Norm Furnace.
- 160/210" Hot Pits.

2. Sources in the USS new inventory but not in the rule

S_1/S_2 BH → identify in new inv and lbs/hr and lbs/ton or gr/dscf.

~~Sinter Plt~~

Sinter Plant BH fug - PWR eq. - where source?

160/210 Plate Mill Torch cutoff M/C - Capacity. Fuel mix

Plate mill slow cool fce - Capacity. fuel mix
Slab mill keep hot fce - Capacity fuel mix

} where source. H2O Stacks

000043